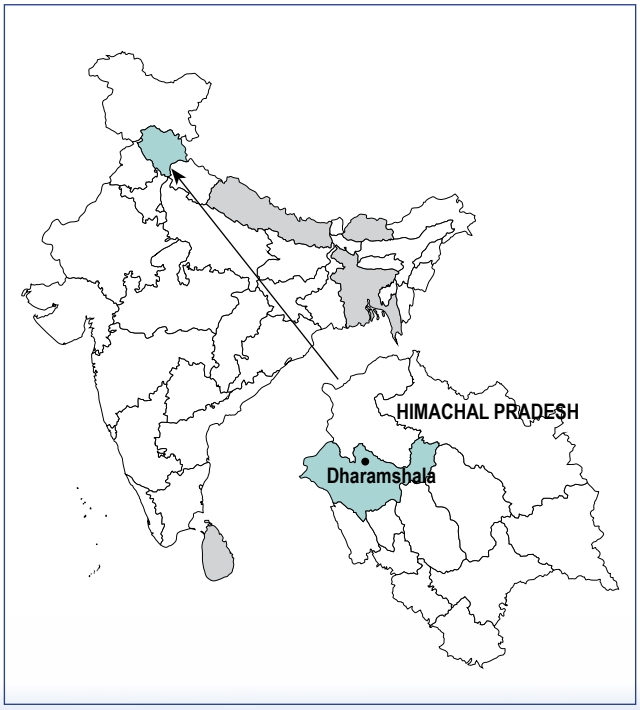
City Resilience Strategy: Dharamshala

Dharamshala, which literally means 'the Holy Refuge', lies perched up on the high slopes in the upper reaches of the Kangra valley. The city is located in 31°21' N to 32°59' N and 75°47' E to 77°45'E at 1,457 m above the mean sea level. Dharamshala is famous as the abode of the Dalai Lama and known throughout the world as the "Little Lhasa" because of the large number of Tibetans and their Government in Exile which is headquartered there. The city is divided into two parts, upper Dharamshala or Macleod Ganj and lower Dharamshala (commercial centre). The city is spread over a 27.51 sq.km area with an urban population of 22,586 as per 2011 census. However, with the recent upgradation of the Municipal Council into a Municipal Corporation, the population of the city has increased to about 55,000.

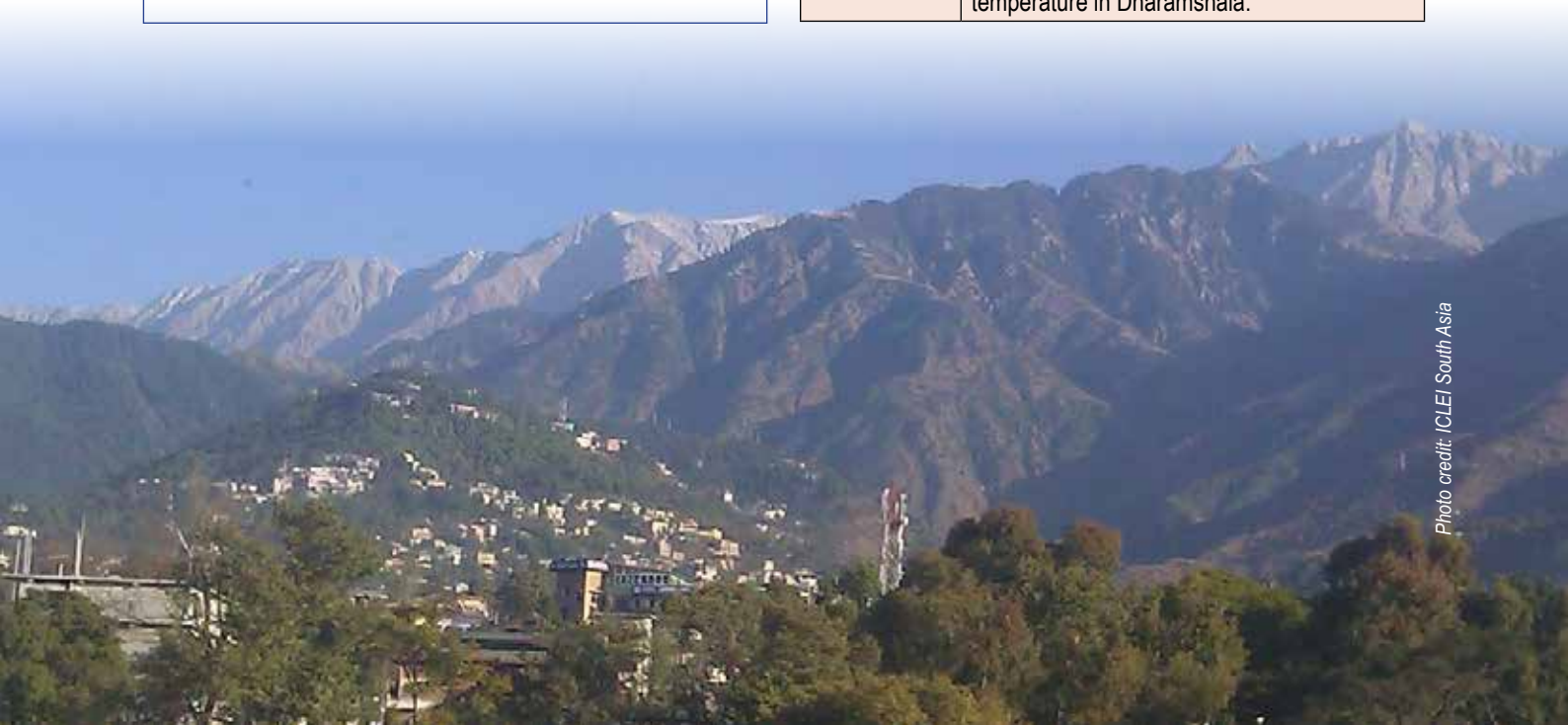
Temperatures in summer can reach 36°C and in winter drops to -1°C with snow and sleet falling in the higher altitudes during January. The monsoon brings heavy rainfall of 3,000 mm (second highest rainfall in India). Dharamshala comes under seismic Zone IV and is prone to earthquakes. It is also highly vulnerable to other natural hazards like cloud burst, landslides, forest fires and earthquakes.



Climate Risks

The two major future climate risks identified through the ICLEI ACCCRN Process (IAP) for Dharamshala are:

Changing Climate Conditions	Climate Scenario Summary Statements
Short duration, high intensity rainfall	Past trends indicate a significant (95% level) decrease in annual precipitation at Dharamshala, which is heightened during the months of January and August.
Increased temperature	Past trends indicate a significant increase of +0.018°C/yr in the annual maximum temperature and a significant decrease of -0.018°C/yr in the annual minimum temperature in Dharamshala.



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Vulnerability Assessment

The fragile urban systems and their corresponding climate fragility statements for Dharamshala are:

Fragile Urban Systems		Climate Fragility Statements
		• Could increase the incidence of landfill fires.
		• Can lead to waste being dispersed into drains blocking them, and across the city resulting in health and hygiene issues.
		• Can strongly influence the breeding cycles of vectors and transmission cycles of pathogens that can increase the risk of diseases like malaria and diarrhoea in the cool climate of Dharamshala.
		• Capacity of drains to carry the water away from the city may be compromised leading to temporary water logging in certain parts of the city.
		• Can damage road infrastructure which can lead to road accidents, traffic congestion and delay of transport of goods across the city.

Through the vulnerability assessment, the adaptive capacity of the key actors identified in the IAP was scored based on three parameters: capacity to organize and respond, availability of resources, and access to information. Actors who receive a low adaptive capacity score are classified as vulnerable while those who receive medium and high scores are classified as supporting and can aid the local government in resilience building activities. The table below presents an overall analysis of actors across the different fragile urban systems.

Actor Analysis for Dharamshala City

Vulnerable Actors	Supporting Actors
• Municipal Council (MC), Dharamshala • Councillors • Tourists • Traffic Police • Urban Residents • Slum Population • Ward Councillors • Tibetan Welfare Office • Migrant labourers	• Planning Department • Irrigation and Public Health Department • Sulabh International • Public Works Department • Hotels • Trekking and Mountaineer Association of Dharamshala

Photo credit: ICLEI South Asia

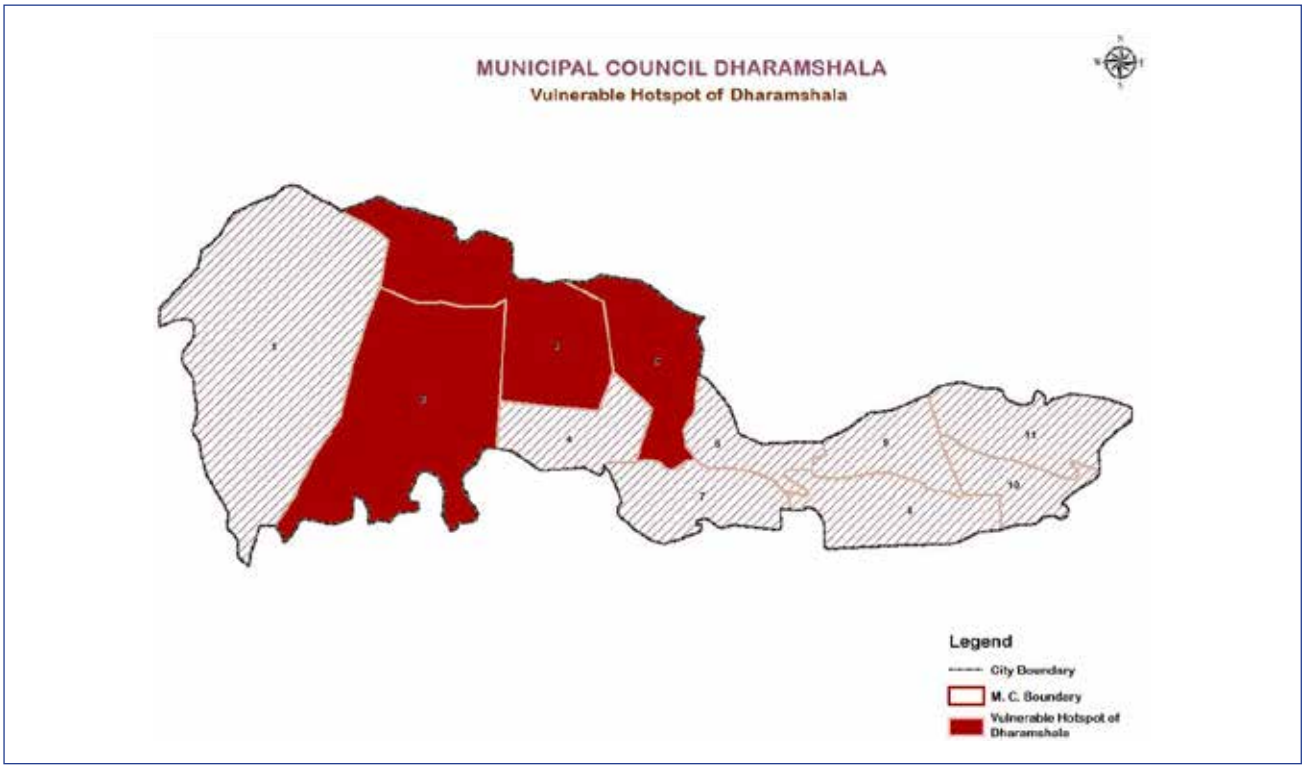
MC Dharamshala, the municipal body scored low and is a vulnerable actor across different urban systems. It suffers from poor access to resources and capacity of personnel.

The adaptive capacities of the fragile urban systems are assessed on the basis of five broad categories – economic, technology/ infrastructure, governance, social, and ecosystem services. Each of these five categories was rated as high/medium/low and averaged across all the urban systems to generate an overall score for each parameter in the city as detailed in the following table.

Overall Adaptive Capacity of Systems in Dharamshala City

Adaptive Capacity Parameters	Adaptive Capacity Score		
	Low	Medium	High
Technological/ Infrastructural			
Economic			
Governance			
Societal			
Ecosystem services			

The areas that were found to be vulnerable to all of the fragile urban systems are wards 2, 3 and 5 (refer map). Ward 2 (Bhagsunag) and Ward 3 (Mcleodeganj) are very popular tourist destinations due to presence of the Dalai Lama temple and Tibetan monasteries. Ward 3 is comprised of seven villages with limited access to services and road connectivity.



An important aspect that evolved from the discussions during the IAP was the need for better coordination among different government agencies. Stricter implementation of regulatory provisions for solid waste management, conservation of water, and traffic control could also help MC Dharamshala reduce the impacts of sudden disruption to services because of climate impacts. Several structural improvements are also required in the city, including decentralised systems of waste management, public toilets, pedestrian and cycling tracks. Improvement in the regulatory mechanisms of urban services will go a long way in improving basic services in the city and its resilience. The city is also undertaking development work through the Smart City Mission and the Swachh Bharat Mission that can be used to initiate resilience actions that are integrated with the developmental projects.

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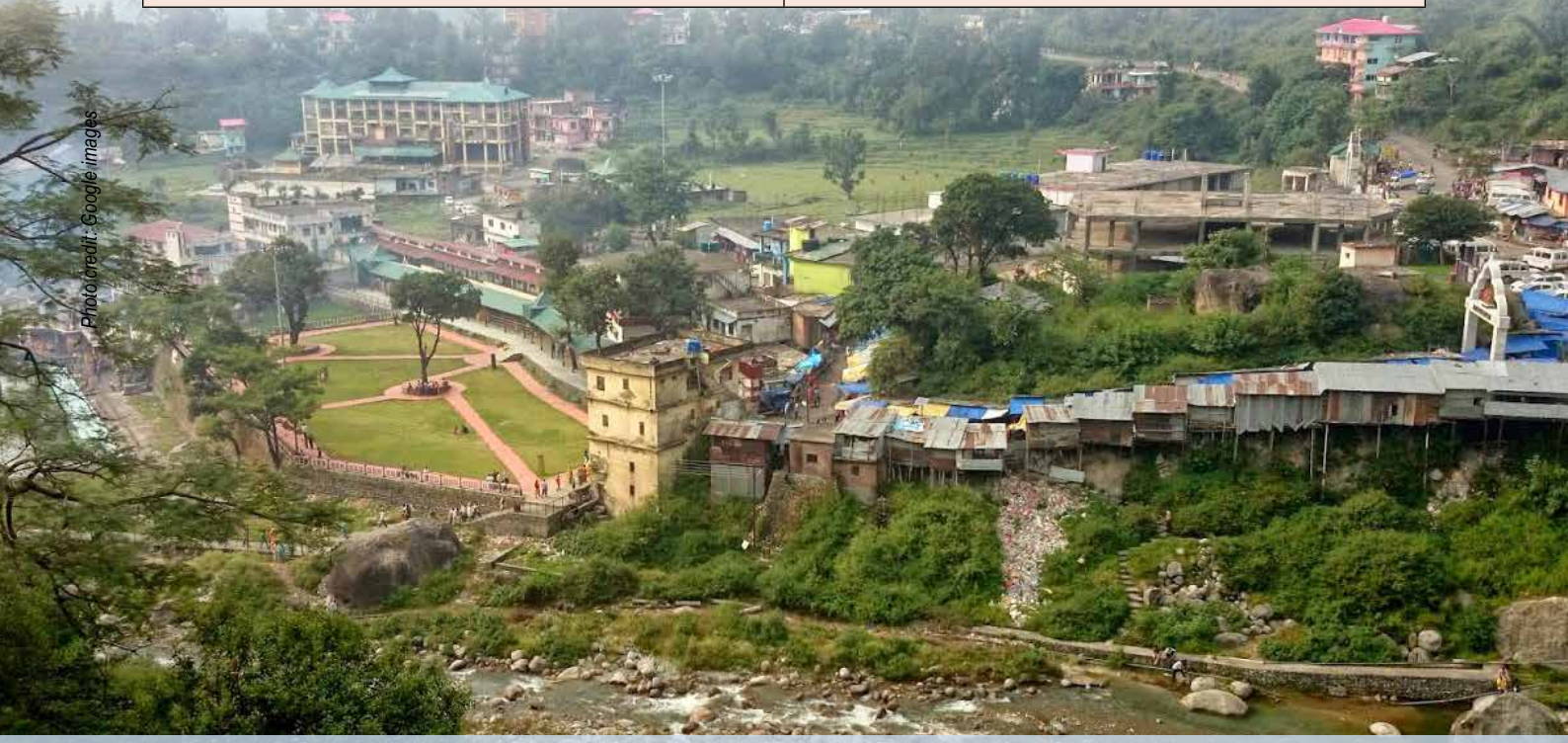
Key Interventions Identified for Dharamshala City

Infrastructural Measures	Non-Infrastructural/ Policy Measures
Solid Waste Management	
• Implementation of decentralized solid waste processing especially in inaccessible areas through initiatives of bio-composting and small resource recovery facilities. **Costs associated:** (Civil and construction work, materials, training): INR 15 lakhs. **Co-benefits:** Alternate job opportunities.	• Promotion of source segregation of municipal solid waste through public awareness and well-designed IEC mechanism. Assess the different type of information systems that can be (banner, pamphlets, hoarding etc) used to educate tourists and locals. **Costs associated:** (IEC materials, trainings, meetings): INR 1.5 lakhs. **Co-benefits:** Resource recycling and reuse can help conserve natural resources and support mitigation of climate change by reducing emissions.
Sewerage and Drainage	
• Installation of public toilets in commercial public areas like markets, tourist spots, bus stations, etc. **Costs associated:** INR 60,000 per toilet unit with bio-digester units for treatment of waste water. **Co-benefits:** Cleaner environmental surroundings.	• Single-window clearance for new sewerage line connections. **Costs associated** (Systemic changes, staff training): INR 1.5 lakhs. **Co-benefits:** Greater transparency and accountability for corporation.
Transportation	
• Creating safe pedestrian and cycling routes for visitors from Dalai Lama Temple to Bhagsunag Temple. This may encourage non motorized transport choices. **Costs associated:** (Civil and construction work): INR 300 lakhs. **Co-benefits:** Better health of citizens.	• Promotion of Public Transportation to avoid congestion especially near Dalai Lama Temple and Bhagsunag Temple. **Costs associated:** (Civil and construction work, vehicles procurement): INR 300 lakhs. **Co-benefits:** Reduce emissions.



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